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EXAMINER	
COUNTS, GARY W	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/027,201	QUIRK, STEPHEN	
	Examiner	Art Unit	
	Gary W. Counts	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7,9-18 and 20-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7,9-18 and 20-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of the claims

The Request for Continued Examination filed February 8, 2006 is acknowledged and has been entered. Claims 1-5, 7, 9-18 and 20-22 are pending.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 3, 4, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 3 and 4 are vague and indefinite because it is unclear if applicant intends the proteinoid microspheres to comprise a cross-linking agent. The instant claims are directed toward proteinoid microspheres (product). However, claims 3 and 4 appear to be directed toward a method of making the product and do not positively recite if the product comprises a cross-linked agent or not. The claim merely recites "in the presence of a crosslinking agent. See also deficiencies found in claims 10 and 11.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Yen et al (Adsorption of sulforhodamine 101 on proteinoid microspheres, Proceed. Intern. Symp. Control. Rel. Bioact. Mater., 20 (1993), Controlled Release Society, Inc. pages 342-343) in light of Krauth (US 4,954,435).

Yen et al disclose proteinoid microspheres comprised of a mixture of amino acids that are thermally condensed (col 1, p. 342). Yen et al disclose that the proteinoid microspheres are bound (linked) with sulforhodamine 101 (fluorophore as shown by Krauth, col 7, lines 22-25) (label).

With respect to the recitation "and the proteinoid microsphere is stable in solution" as recited in the instant claims. Since Yen et al disclose the same proteinoid microsphere as recited in the instant claims, it is inherent that the proteinoid microsphere is stable in solution.

With respect to the recitation ""for signal amplification or diagnostic imaging" as recited in claim 5. The recitation "for signal amplification or diagnostic imaging" is intended use of the proteinoid microsphere. Thus, the recitation is not given patentable weight because it is intended use since Yen et al disclose the same proteinoid microshere as recited in the instant claims. The proteinoid microsphere of Yen et al would be capable of being used for signal amplification or diagnostic imaging.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1, 2, 5, 7, 9, 12-18 and 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lohrmann et al (US 6,193,953) in view of Steiner et al (US 4,925,673) and Kayyem et al (US 6,232,295).

Lohrmann et al disclose protein microparticles that can be comprised of chemically synthesized amino acid polymers (col 5, lines 40-57). Lohrmann et al disclose that the microparticles can comprise fluorines or I^{125} (radioisotope)(label) (col 15, lines 1-16). Lohrmann et al also disclose that the microparticles can comprise a targeting moiety such as an antibody linked to the microparticle (col 13, lines 27-29).

Lohrmann et al differ from the instant invention in failing to specifically teach that the protein microparticle is a proteinoid microparticle. Lohrmann et al also differ from the instant invention in failing to teach the label is linked to the proteinoid microsphere.

Steiner et al discloses proteinoid microspheres (microparticles). Steiner et al discloses that the proteinoid microspheres are man made condensation polymers produced by random or directed assembly of natural or synthetic amino acids. Steiner et al disclose methods of producing the microspheres by using heat to condense the

amino acids (see examples). Steiner et al disclose a mixture of amino acids comprising an acidic amino acid and a basic amino acid (col 5, lines 27-51).

Kayyem et al disclose polymeric delivery vehicles that are tissue specific used in MRI applications. Kayyem et al disclose that a contrasting agent (label) is attached (linked) to the polymeric delivery vehicle. Kayyem et al disclose that this provides for a safe and effective means and for improved targeted delivery of contrast agents to specific cells or tissue (col 2-col 4) and allow for medical imaging.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to synthesize the protein microparticles of Lohrmann et al using condensed amino acids such as taught by Steiner et al because Lohrmann et al specifically teaches that the protein microparticles can be comprised of synthesized amino acid polymers and Steiner et al specifically teaches that proteinoid micropsheres are man made condensation polymers produced by random or directed assembly of synthetic amino acids. Therefore, one of ordinary skill in the art would have a reasonable expectation of success to form the protein microspheres of Lohrmann et al by condensing amino acids such as taught by Steiner et al. Therefore, the combination of Lohrmann et al and Steiner et al disclose proteinoid microspheres.

It also would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate attached labels as taught by Kayyem et al into the modified protein microparticles of Lohrmann et al because Lohrmann et al specifically disclose that their microparticles can be polymeric (col 5) and used in imaging applications. Further, Kayyem et al teaches that this provides for a safe and effective

means and for improved targeted delivery of contrast agents to specific cells or tissue (col 2-col 4) and allow for medical imaging. Therefore, one of ordinary skill in the art would have a reasonable expectation to attach labels as taught by Kayyem et al into the modified proteinoid microparticle of Lohrmann et al.

With respect to the recitation "and the proteinoid microsphere is stable in solution". Since the combination of the above references teach the same microspheres as recited. The modified microspheres of Lohrmann et al would be stable in solution.

With respect to claims 5 and 13-16 as recited in the instant claims. The claims are directed to intended use of the proteinoid microspheres and therefore are not given patentable weight. Further, since the combination of references disclose the claimed invention and the Applicant has not recited any structural differences over the prior art, the prior art is capable of performing the intended use.

8. Claims 3, 4, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lohrmann et al in view of Steiner et al and Kayyem et al and further in view of Mathiowitz et al (US 5,271,961).

See above for the teachings of Lohrmann et al, Steiner et al and Kayyem et al.

Lohrmann et al., Steiner et al., and Kayyem et al differ from the instant invention in failing to teach the proteinoid microsphere is formed by thermal condensation of a mixture of amino acids in the presence of a cross linking agent.

Mathiowitz et al disclose protein microspheres that can be modified. Mathiowitz et al disclose that the modification of the protein can be done by cross-linking the protein using agents such as glutataldehyde (col 6, lines 51-62). Mathiowitz et al

disclose that such modifications provides a protein having enhanced or altered thermal stability, surface reactivity, molecular weight, charge and resistance to proteases (col 5, lines 50-56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate cross-linking as taught by Mathiowitz et al into the modified microspheres of Lohrmann et al because Mathiowitz et al shows that such modifications provides a protein having enhanced or altered thermal stability, surface reactivity, molecular weight, charge and resistance to proteases.

Response to Arguments

9. Applicant's arguments filed February 8, 2006 have been fully considered but they are not persuasive.

Applicant argues that Lohrmann and Steiner fails to disclose labeled proteinoid microspheres comprising a mixture of amino acids that are thermally condensed that are stable enough to avoid release of an encapsulated label under a variety of different conditions. This is not found persuasive because the combination of Lohrmann et al., Steiner et al and Kayyem et al read on the instantly recited labeled proteinoid microspheres (see above for the teachings of Lohrmann, Steiner and Kayyem).

Applicant argues that one of skill in the art would not be motivated to modify or combine the teachings of Lohrmann on stabilized protein microparticles with the teachings or Steiner on unstable proteinoid microspheres because there is no evidence of record that the proteinoid microspheres of Steiner have properties similar to the protein microspheres of Lohrmann. This is not found persuasive because Lohrmann et

al specifically teaches that the protein microparticles can be comprised of synthesized amino acid polymers and Steiner et al specifically teaches that proteinoid micropsheres are man made condensation polymers produced by random or directed assembly of synthetic amino acids. Applicant further argues that the combination of references does not disclose that proteinoid microspheres would be sufficiently stable in solution and under a variety of pH and other conditions to retain an encapsulated label. This is not found persuasive because "stable in solution" is a characteristic of the proteinoid microspheres and since the combination of references teach the same proteinoid microspheres as claimed, the microsphere of the combined references would be stable in solution. Also, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., under a variety of pH and other conditions to retain an encapsulated label) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). With respect to applicant arguments stating that one of ordinary skill in the art would not substitute the proteinoid microspheres of Steiner for the protein microcapsules of Lohrmann. This is not found persuasive because the Examiner has not stated substituting the particles of Lohrmann et al with the proteinoid microspheres of Steiner (see 103 obviousness rejection above). Therefore, this argument is not on point.

Applicant argues that Mathiowitz does nothing to cure the defects of Lohrmann and Steiner. Applicant further argues that Mathiowitz does not state that proteinoid

microspheres should or can be stabilized by crosslinking agents. This is not found persuasive because Lohrmann et al specifically teaches protein microspheres and Steiner specifically teaches how to form protein microspheres and the combination of Mathiowitz et al with Lohrmann et al, Steiner et al and Kayyem et al teaches microspheres as claimed. Further, it is unclear if the microspheres comprise the crosslinking agent and as stated above the claims are directed to products and not methods of making the product. Thus, determination of patentability is based on the product itself and the patentability of a product does not depend on its method of production. If the product in a product by process claim is the same or obvious from a product in the prior art then the claim is unpatentable.

Applicant argues that Kayyem does nothing to cure the defects of Lohrmann and Steiner and that Kayyem provides no mention whatsoever of proteinoid microspheres or even microspheres and therefore does not disclose or teach how to make stable proteinoid microspheres. This is not found persuasive because Examiner has not relied upon Kayyem et al for teaching proteinoid microspheres but rather has relied upon the combination of Lohrmann et al and Steiner et al for teaching this limitation. Further, as stated above Lohrmann et al specifically disclose that their microparticles can be polymeric (col 5) and used in imaging applications and Kayyem teaches a label is attached to polymeric molecules which provides for a safe and effective means and for improved targeted delivery of contrast agents to specific cells or tissue and allow for medical imaging. Further, with respect to applicant's statement that Kayyem does not teach how to make stable proteinoid microspheres. The claims are not directed to

methods of making a proteinoid but rather are directed to the proteinoid microparticle (product).

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary W. Counts whose telephone number is (571) 2720817. The examiner can normally be reached on M-F 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571) 272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gary Counts
Examiner
Art Unit 1641
March 14, 2006

Mary E. Ceperley
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